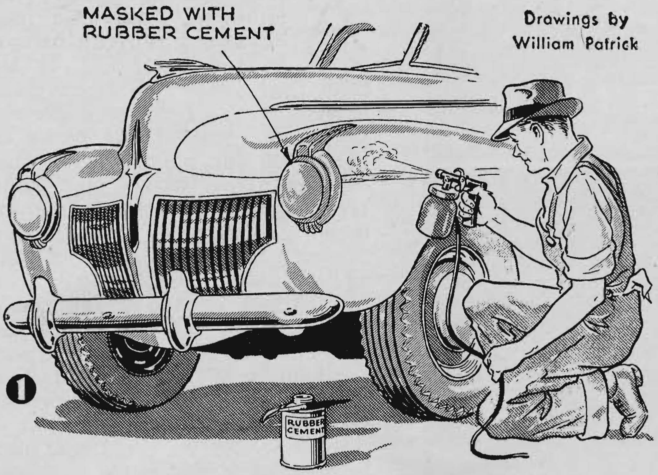
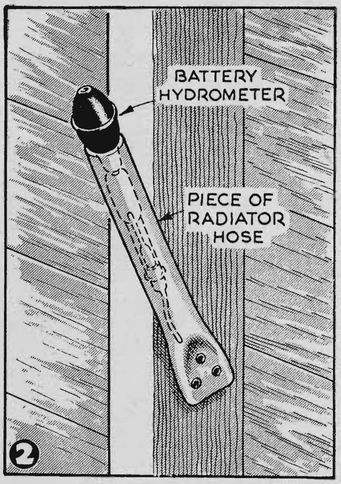
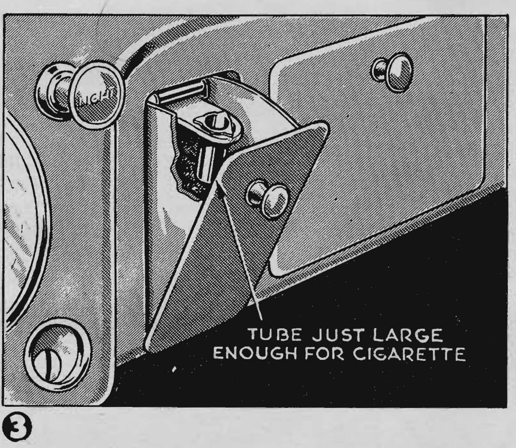
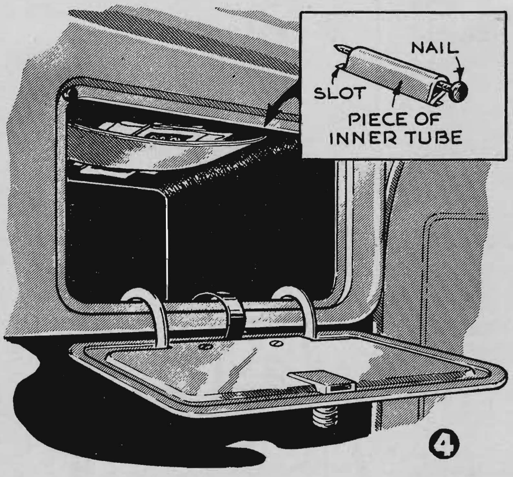
# IDEAS FOR MOTORISTS

Drawings by William Patrick






TUBE JUST LARGE ENOUGH FOR CIGARETTE
3



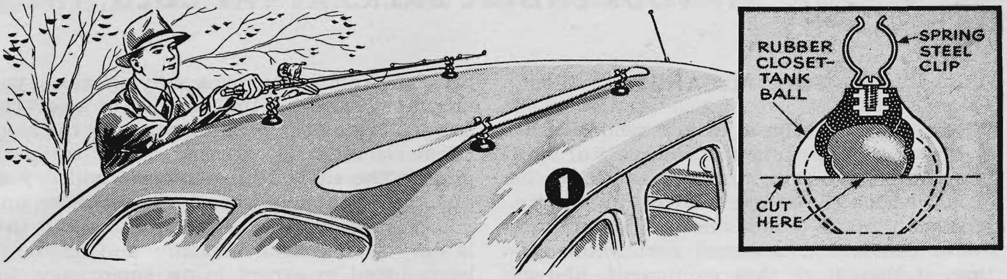
**1 MASKING CHROMIUM TRIM** on your car in preparation for a paint job may be difficult with the customary tape. Some of the brightwork may be hard to reach, and some may be so narrow as to make tape awkward to handle. Paint these places—or all the trim, if you like—with ordinary rubber cement. This material peels off easily along with paint sprayed on it.—J. J. B.

**2 YOUR BATTERY HYDROMETER** can be kept in your garage without danger of breakage if you enclose it in a short length of discarded radiator hose. Nail the hose by one end to a stud, letting the upper part project at an angle, as shown in the drawing, and insert the hydrometer.—A. H. W.

**3 AUTOMATIC EXTINGUISHING** of cigarettes, instead of letting them smolder in the bottom of the ash receptacle on your dash, is possible with the addition of a short metal tube the diameter of a cigarette. Drill the extinguishing bar in the ash receptacle for a tight fit, flare the upper end of the tube, and press the tube into the hole. A lighted cigarette inserted in the tube will go out. It will be pushed into the ash receptacle when the next butt is inserted.—K. M.

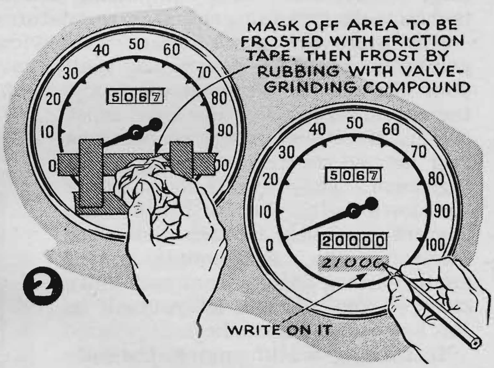
**4 REGISTRATION PAPERS** and road maps can be kept conveniently away from other items when held at the top of a glove compartment by a piece of old inner tube. Slot the fiber top of the compartment, slip the doubled end of the tubing through, and hold it with a nail as shown.—W. F. J.

# USEFUL AUTO HINTS

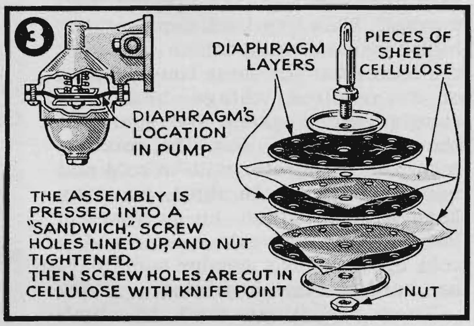


**1 RUBBER VACUUM CUPS** with strength enough to hold light articles on top of your car can be made from discarded flush balls that your plumber may be glad to save for you. There should be no puncture in the upper part. Cut off the balls about ⅛" below the halfway mark and face the edge on a rough emery wheel. Affix a spring clip to each threaded top.—J. E. W.

**2 FOR A CONSTANT REMINDER** of when to change oil or rotate tires, frost a strip on the speedometer glass to take penciled memoranda, which can be erased or washed off when desired. One way to frost the glass is to mask an area with tape and rub with valve-grinding compound.—R. H. D.

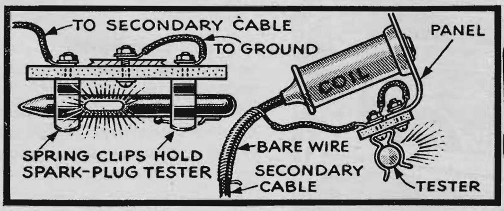

MASK OFF AREA TO BE FROSTED WITH FRICTION TAPE. THEN FROST BY RUBBING WITH VALVE-GRINDING COMPOUND
5067
20000
21000
WRITE ON IT
2

**3 EMERGENCY REPAIR** to a fuel-pump diaphragm is possible with the transparent cellulose wrappings from a candy bar, loaf of bread, or the like. Sandwich a sheet between each two adjoining diaphragm layers, trim the edges, and punch screw holes; then replace the assembly.—F. W. D.

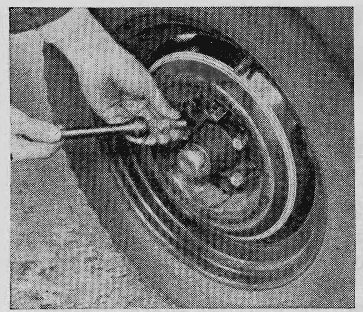

3
DIAPHRAGM LAYERS
PIECES OF SHEET CELLULOSE
DIAPHRAGM'S LOCATION IN PUMP
THE ASSEMBLY IS PRESSED INTO A "SANDWICH," SCREW HOLES LINED UP, AND NUT TIGHTENED. THEN SCREW HOLES ARE CUT IN CELLULOSE WITH KNIFE POINT
NUT

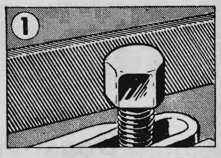
**4 CHECKING ON SPARK PLUGS** is continuous with an electrically wired holder for a neon-type tester mounted within sight under the dashboard. Remove 12" of insulation from a length of wire, wrap it around the secondary cable, tape it over, and connect the other end of the wire to one holding clip. Ground the other terminal. Make the base of some insulating material. The tester will light by induction.—A. H. P.

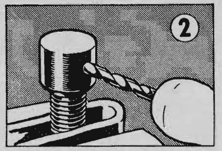
**Drawings by STEWART ROUSE**

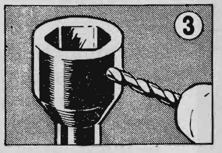


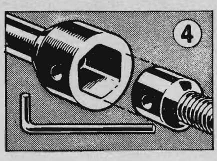
4
IGNITION IS O.K. IF TESTER FLASHES REGULARLY

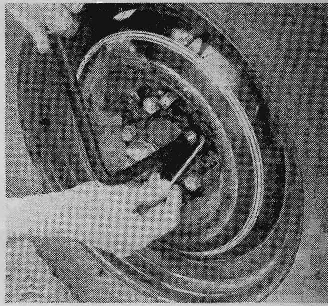












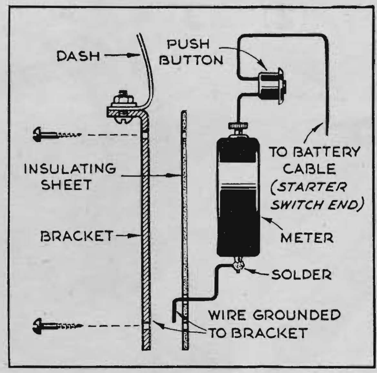
**TIRE THEFT** is made extremely difficult if you make use of the simple procedure outlined in the photos and drawings above. In principle, the method consists of rounding one tire-retaining nut or bolt so that it cannot be turned by a lug wrench without a special key. The idea is adaptable either to the nuts or the bolts variously used with pressed-steel wheels.

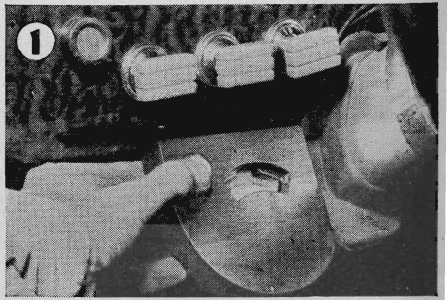
Remove one nut or bolt from each wheel, as in the photo at the left; since only one is taken from each wheel, it isn't necessary to jack up the car. Secure each nut or bolt in a vise (protecting the threads if you have bolts), and file off the corners as in Fig. 1. The job can also be done on a grinding wheel. Test the nut or bolt to make sure that the wrench won't hold; then drill a 3/16" hole through it, as in Fig. 2. A similar hole, Fig. 3, should be drilled through the lug wrench, located about ¼" back from the edge. For the key, use a 20-d. nail with a right-angle bend about ¾" from the end (Fig. 4). The photo at the right shows how the key is held in changing a tire safeguarded this way.—C. P. FITZPATRICK.

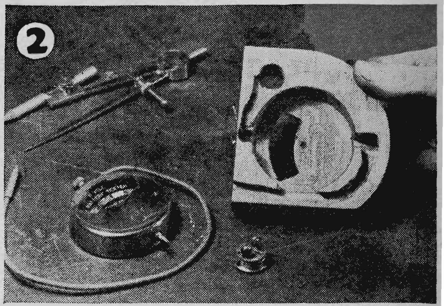
**TESTING THE BATTERY** can be done in an instant with the handy dashboard meter shown in Fig. 1. It consists of a storage-battery tester, a push button, and a block of wood that serves as a mount. When in doubt about your battery, it's necessary only to press the button and note where the meter hand stops to tell whether the battery is dangerously low or sufficiently charged.

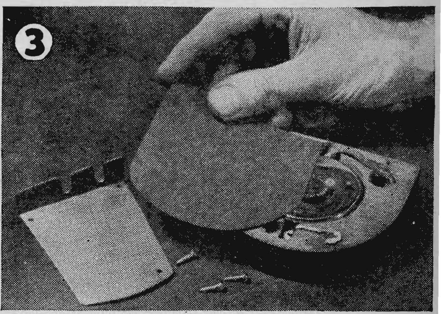
The tester should be the inexpensive voltmeter type, calibrated in zones to indicate degree of charge. With an expansive bit or chisel and gouge, hollow out the back of the 1" mounting block to receive the tester, as in Fig. 2. Determine which of its terminals should be connected to the ungrounded side of the battery, and install a push button in series with this side. Run a well-insulated wire from the button to the end of the battery cable that is connected to the starter switch. The other terminal on the tester should be grounded through the mounting bracket to the dash. Figure 3 shows this metal bracket, which also serves to hold the tester in its recess. A piece of cardboard will insulate the meter case from the bracket.

Take readings after the car has been idle for a time; you may not get accurate results after the generator has been charging the battery or after a heavy starting drain. To verify calibration of the meter, note the reading when the battery has been fully charged, and use that as a subsequent reference point.—W. E. B.

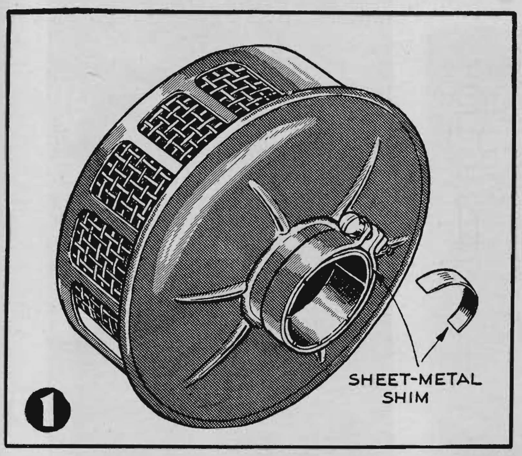






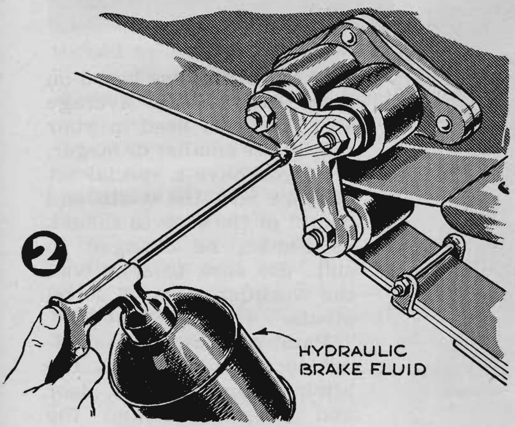


# USEFUL AUTO HINTS

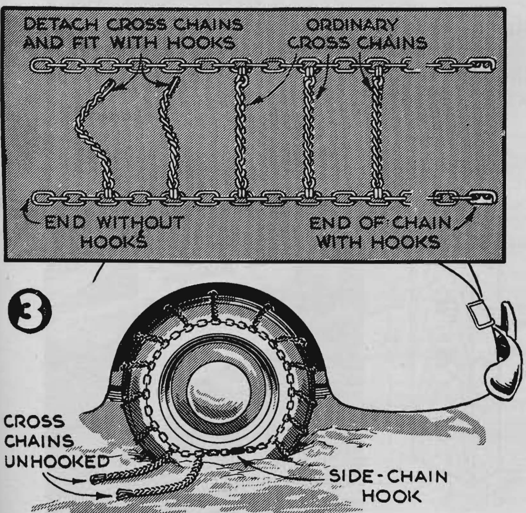


**1 CARBURETOR AIR FILTERS** rattle like flivver fenders when they become loose and, worse luck, they let in unfiltered air. In time, too, the clamps holding them have a tendency to distort so that tightening is useless. A repair to make them tighten evenly and to stop further distortion can be made with a steel shim put on under the clamp as shown in the drawing.—R. R. K.

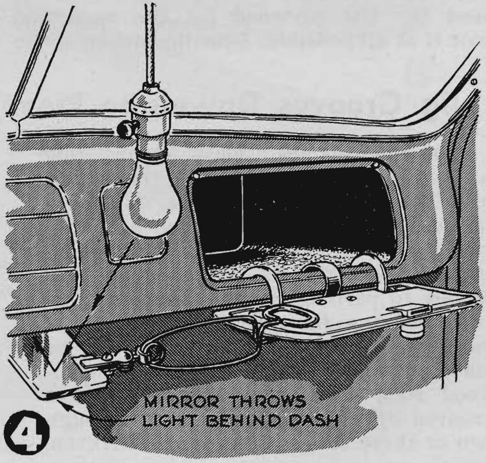
**2 SQUEAKING RUBBER BUSHINGS** and shackles on the ends of springs, shock absorbers, and the like are a particular nuisance to many drivers who know they can be oiled only at the risk of rapid deterioration of the rubber. Hydraulic-brake fluid sprayed on them, however, is not harmful to the rubber, and it lubricates sufficiently to cure the most persistent squeak.—J. C.



**3 EVER GET STUCK** because you couldn't jack up the car to put on chains? One way to apply full chains without moving or jacking the car is to fit two or three of the cross chains at one end with hooks instead of links, as shown in the drawing. These hooks can be detached when you're in mud or snow and the ends of the chain can be joined. Rehook them on firm ground.—B. W. P.

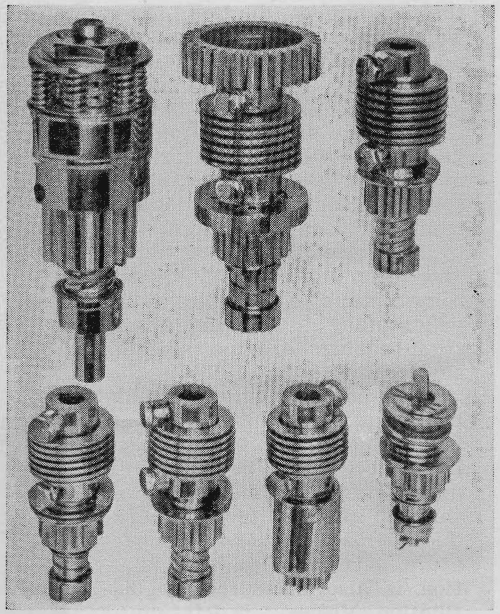


**4 WORK UNDER THE DASHBOARD** or in other dark corners in the car can be speeded up with reflected light from a mirror. You can get the light anywhere you want it by attaching a rear-vision mirror to a swivel-head clamp-on reading lamp from which the socket has been removed.—M. A. J.


MIRROR THROWS LIGHT BEHIND DASH
4

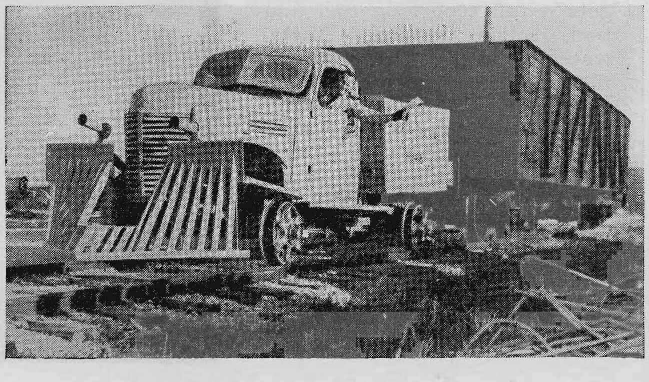
**COLOR-CHANGING PAINT** signaled cylinder temperatures in German test engines used to check motor fuels, according to a German technical publication. Instead of using a test cylinder studded with numerous thermometers or thermocouples, technicians sprayed one as at the left with a temperature-sensitive paint. This changed color at various well-defined temperature ranges. The cylinder, at first of uniform color, turned many-hued as it heated up in operation. By studying the shift of border lines between the several color zones, Nazi engineers could compare the operating temperatures of various portions of the cylinder to check the combustion characteristics of aviation and other motor fuels.

**STARTING WAR MACHINES** is a specialty at the Eclipse Machine Division of Bendix Aviation Corporation. Shown at right are seven of 500 standard and special starters. That at the upper left in the photo is used in tanks, the next is for PT boats, and that at right in the lower row is for starting generator plants. The others are typical models for jeeps and other military vehicles having internal-combustion engines.



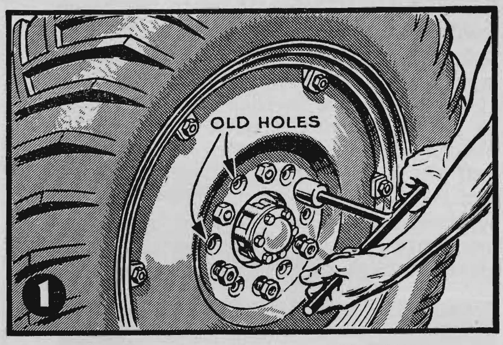
**SELENIUM-TREATED OIL** is shown by tests at the Battelle Institute, of Columbus, Ohio, to support increased bearing pressures and to resist the tendency of motor oil to oxidize and form sludge and gummy resins. The nonmetallic chemical, a by-product of copper mining, is used in photoelectric equipment, talking movies, glass coloring, and various other industries.

**PART TRUCK, PART TRAIN,** this hybrid machine is a locomotive built from the junked cab, engine, and chassis of a truck. It is equipped with flanged train wheels and a discarded cowcatcher so it can ride the rails, and is powerful enough to haul a loaded freight car. Machinist Frank P. Hatfield, of Harriman, Tenn., used his ingenuity in putting it together to pull tank and gondola cars on the tracks at the naval air station at Houma, La.

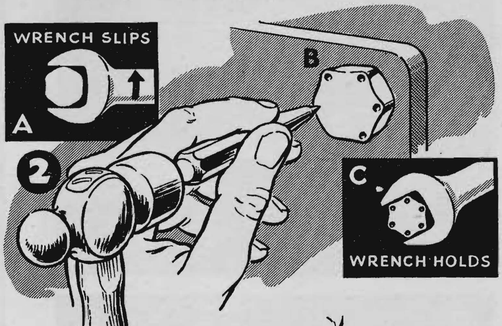


# USEFUL AUTO HINTS

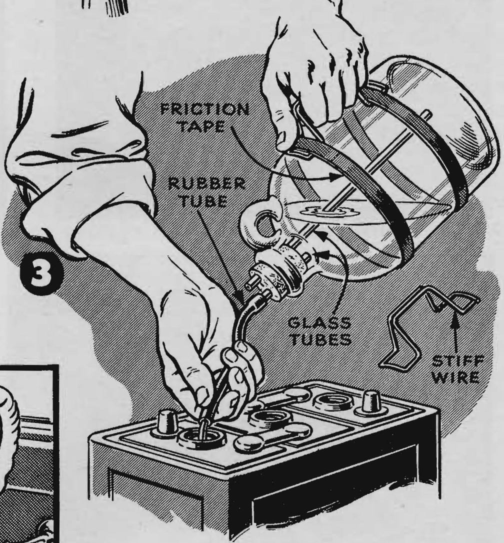
**1 DAMAGED WHEELS** often result when trucks or trailer tractors have been run with loose wheel-mounting lugs. To repair this defect without providing new wheels, remove any similar wheel in good condition, fit it over the damaged one as a guide, and drill new holes in the spaces between the enlarged openings.—H. W. S.



**2 ROUNDED CORNERS** on bolts that have been turned up tightly create a problem when the time comes for them to be removed. If your wrench slips, expand the corners of the bolthead slightly by indenting with a metal punch. The wrench will then be able to get a secure grip on the resisting head.—J. K.

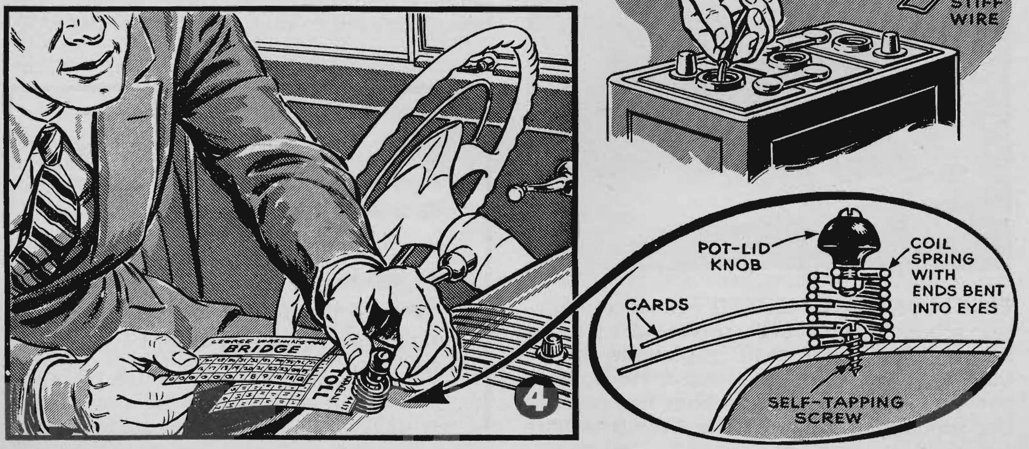


**3 BATTERY WATER** can be poured accurately, even into out-of-the-way well openings, with this handy filler made of a half-gallon jug. Drill two holes in the cork and insert one long glass air vent and one short pouring tube. An 18″ section of rubber hose should be taped securely to the pouring tube. Bend a handle of coat-hanger wire and tape it to the center of the jug so that it can be held with one hand while the other controls the flow of water.—*R. S.*



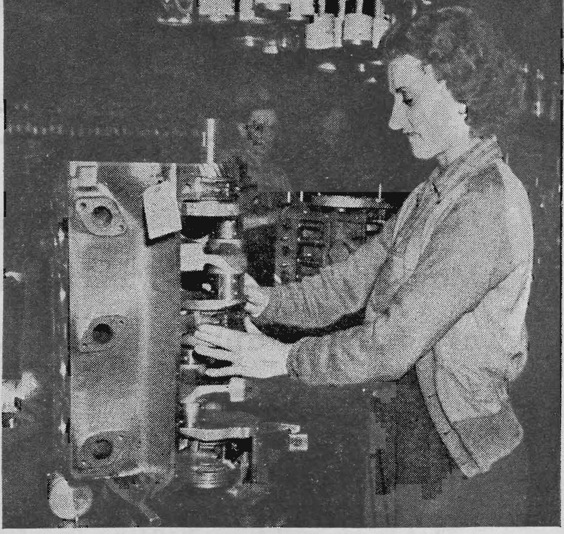
**4 DASHBOARD CLIPS** for keeping toll books, route maps, addresses, or other needed papers at your finger tips can be made with just a few turns of a coil spring. Hook the bottom loop around a self-tapping screw and attach it to the dash or between the sections of the windshield. A pot-lid knob bolted to the top of the spring will help to separate the turns.—*W. E. B.*

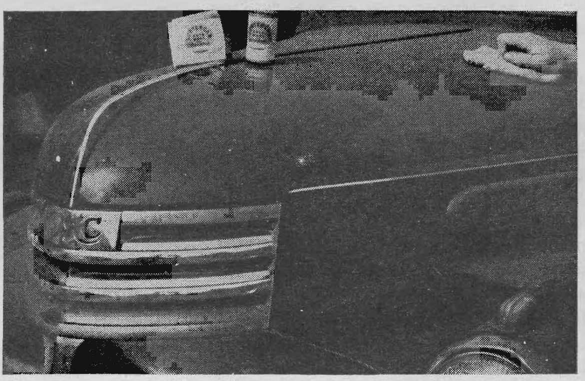
*Drawings by* STEWART ROUSE



# AUTO IDEAS

**LONGER LIFE** is in prospect for engines equipped with new "tri-alloy" bearings developed for military needs by the Ford Motor Company. Instead of cadmium, a metal in widespread use for bearings before the war, the new material consists of about 35 to 40 percent lead, 4.5 to 5 percent silver, .5 percent iron, and the rest copper. Tests have indicated the new bearings last three times as long as regular ones—even under the most trying conditions. When used on heavy-duty trucks, some showed no measurable wear after more than 50,000 miles. At the right, one of the bearings is being fitted to an engine at a Ford plant.

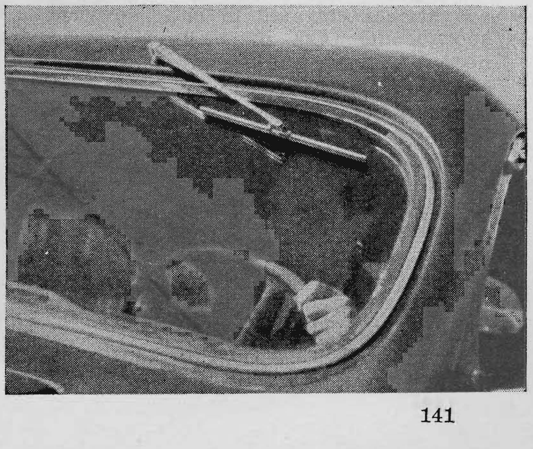




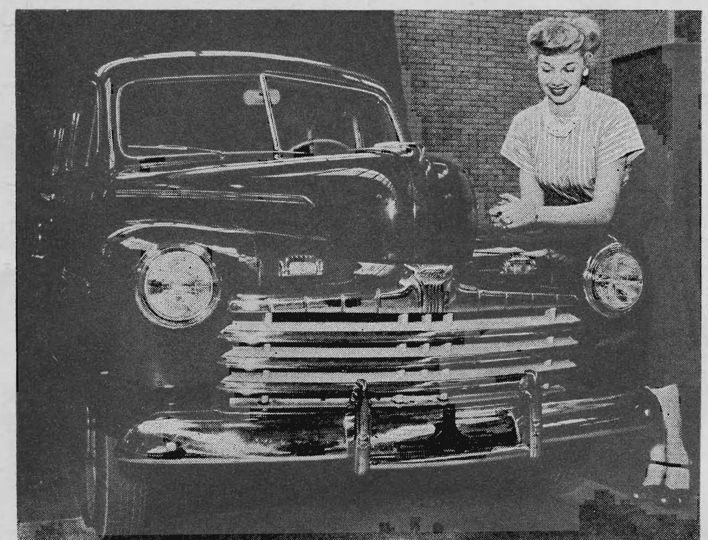
**NO TOILSOME POLISHING** is needed to give an automobile new luster when you use a cleansing solution produced by Parks Associates, of Glendale, Calif. After the car has been washed, the cleanser is applied with a cloth, an area about 3′ square being cleaned at a time until the job is completed. Then it is rinsed off with water and allowed to dry. The makers assert that by using this cleaner it also is possible to renew the brightness of chrome or other highly-polished metals pitted with salt water. The manufacturer recommends it for furniture, tile, walls, and linoleum.

**CHECKING A PISTON RING** for trueness of periphery and width of gap requires only five seconds with an electronic gauge produced by the Sheffield Corporation, of Dayton, Ohio. After the ring to be tested has been inserted in a master ring of correct dimensions, the entire assembly rotates between scanning beams of light directed on photoelectric cells. The latter operate three signal lights, red, yellow, and green, indicating whether the ring meets specifications.

**WIPER ARMS** designed by the Anderson Company, of Gary, Ind., for use on military aircraft are said to hold blades securely under all conditions until a release lever is touched. The stainless-steel arms, currently available to civilian autoists, are adjustable for length and wiping pressure, and can be lifted out of the way when the windshield is cleaned. They will fit different types of wiper-motor shafts, a set of adapters being provided with each arm.



# Ford and Nash Show First New Cars

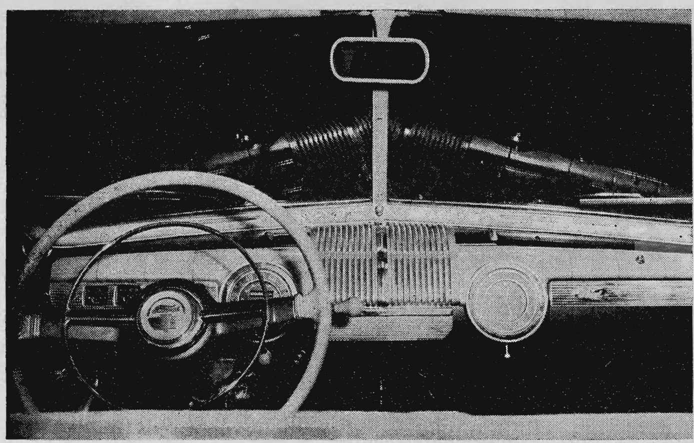


Front of the 1946 Ford, above, looks different from 1942 models due chiefly to changes in the radiator grille, parking lights, and trim.

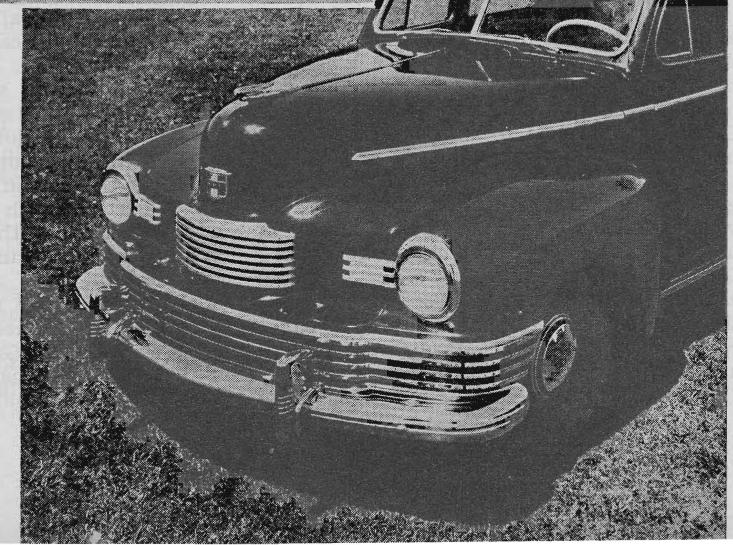
AS THE wraps come off the first U. S. cars built since shortly after Pearl Harbor, predictions that new models would resemble the prewar ones are borne out.

The first Fords feature different styling of basically the 1942 body design, plus a number of mechanical improvements, among them new crankshaft bearings, greater volume and pressure of engine oil, relocation of valves for better cooling, a new distributor, an oil cleaner, an oil-bath air cleaner, and modified shock absorbers and springs. Further Ford plans are unofficially reported to include manufacture of one car 15 to 20 percent under prewar Ford price levels, and of another with a five-cylinder in-line engine.

Styling and mechanical changes characterize the Nash "600", which is in the low-priced field. Elimination of the frame in favor of a combined body-and-chassis construction has reduced weight by 500 lb. and has made possible gasoline mileages of from 25 to 30 miles per gal. All wheels have individual coil-spring suspension.

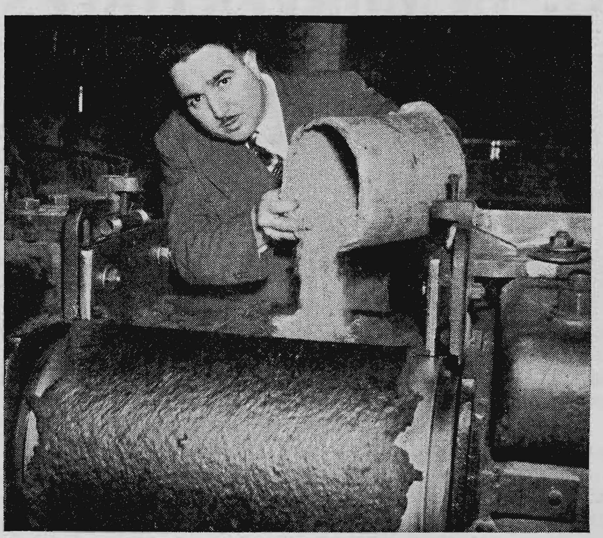


The steering wheel and the instrument panel of the new Ford, above, also reveal a strong basic resemblance to the ones in the last prewar models. The car appearing in this and the upper photo is a pilot model built by hand, not a production job.



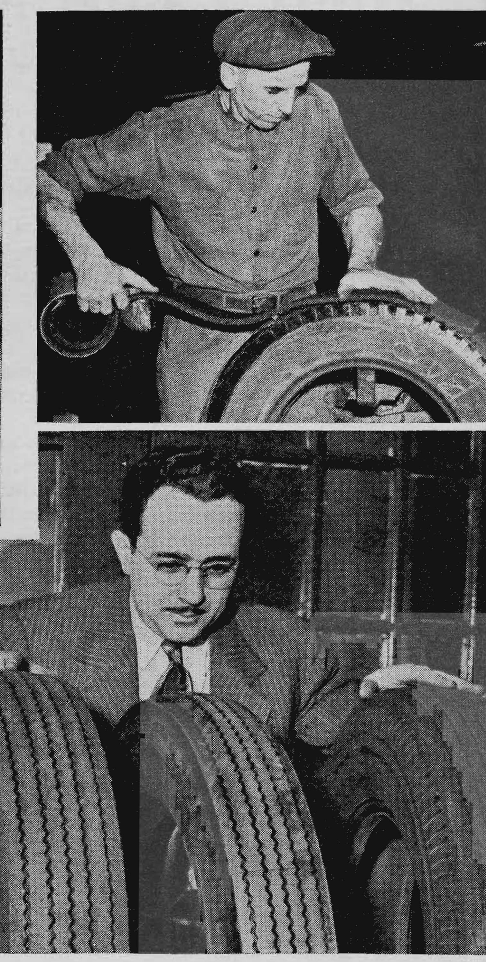
Restyling of the Nash "600" brings the massive-looking design shown at the right. Weight has been reduced by 500 lb. as compared to equivalent prewar models.

# AUTO IDEAS



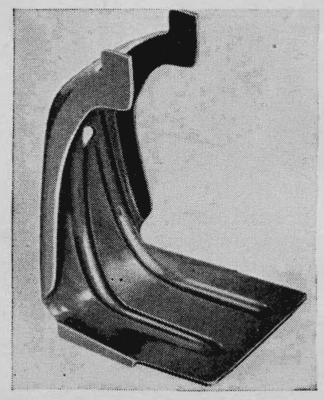
Sawdust spread over soft rubber in the process of retreading gives the tire greater traction.

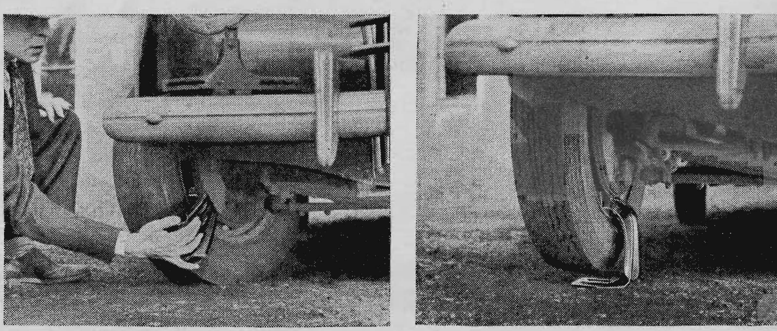
**ORDINARY SAWDUST** eventually may relegate tire skid chains to the limbo of crank handles. Seeking a method of giving tires better traction and eliminating chains, Clarence and Lonnie Gapen, of Morgantown, W. Va., experimented with a number of materials and finally settled upon sawdust. With the cooperation of the Andy brothers, who operate a tire shop in Washington, Pa., they developed a milling process by which sawdust is worked into the camelback used for retreads. In tests, the tires carried an auto up a 12-percent snow and ice-covered grade without difficulty, and started and stopped the car on the hill without skidding. Rubber companies now are making tests to see if the process increases mileage.



At the top, a sawdust camelback is applied. Bottom center is a normal retread. At the right, a sawdust recap after 8,000 miles, and at the left a new one.

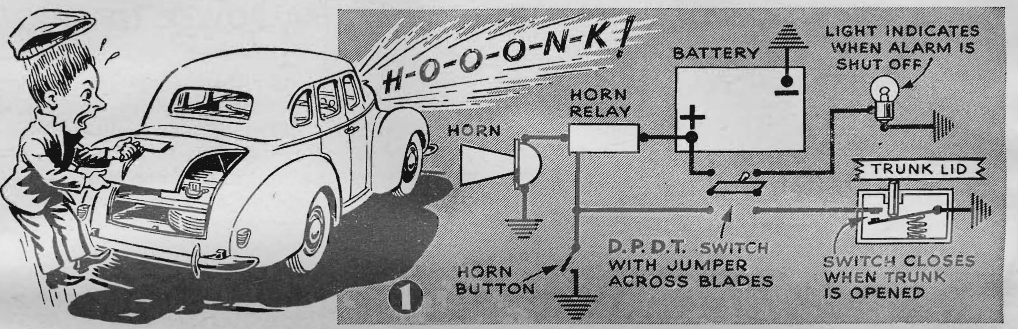
**FORGED IN ONE PIECE,** a new jack developed for passenger cars by John M. Westrate, of Detroit, has no movable parts to slip or get out of order. After the head has been fitted against the brake drum, the auto is driven forward or backward until the jack is resting vertically on its broad base. When the job is done, another short movement of the car frees it. There is no interference with removal of the tire or rim. Secured to the wheel with a safety strap, the device also can be used as a mud hook.





Inserted between the brake drum and rim, this one-piece jack raises the wheel off the ground when the car is driven either forward or backward.

# USEFUL AUTO HINTS

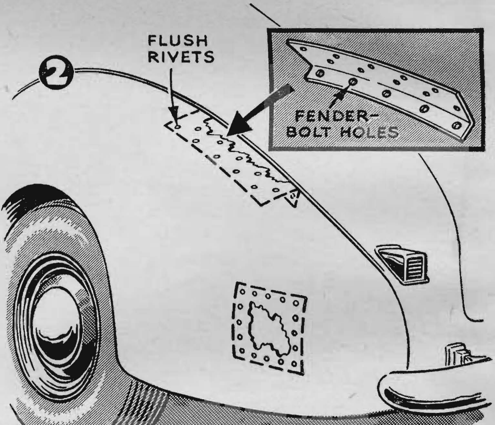

H-O-O-O-N-K!
BATTERY
LIGHT INDICATES WHEN ALARM IS SHUT OFF
HORN RELAY
HORN
+
TRUNK LID
D. P. D. T. SWITCH WITH JUMPER ACROSS BLADES
SWITCH CLOSES WHEN TRUNK IS OPENED
HORN BUTTON
1

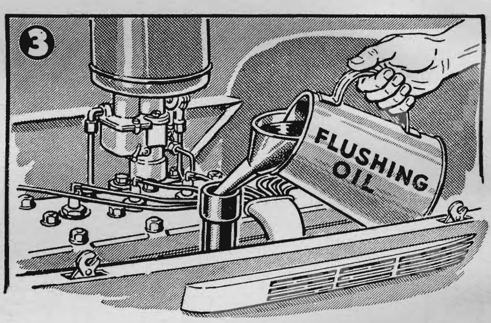
**1 THIEVES** breaking into a car equipped with this alarm would set the horn blowing. The alarm circuit uses one or more door switches (the type that automatically controls refrigerator lights) installed under the trunk lid or in the doors. Connect them to one side of a double-pole double-throw switch on the instrument panel and a pilot light to the other. The light is a reminder to throw the switch.—J. H. P.

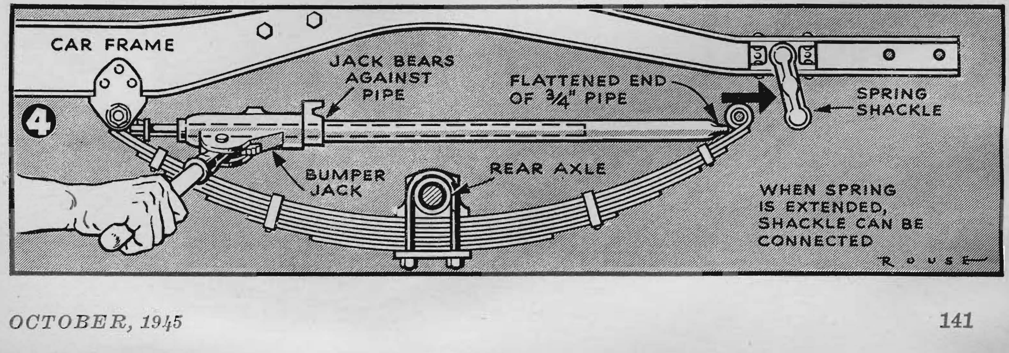
**2 RUST HOLES** in fenders can be repaired by forming a sheet-metal patch to the contour of the underside, attaching with rivets or machine screws, and applying putty and paint. Countersink the rivet holes and file the heads flush. For a break adjoining the body, bend down one edge of the patch, drill holes corresponding to those in the fender edge, and bolt the piece to the body.—J. H. D.

**3 FLUSH OUT** an engine before dropping the oil pan for crankcase repairs. This makes cotter-pin, nut, and bolt removal easier. You also stay cleaner.—H. D. JR.

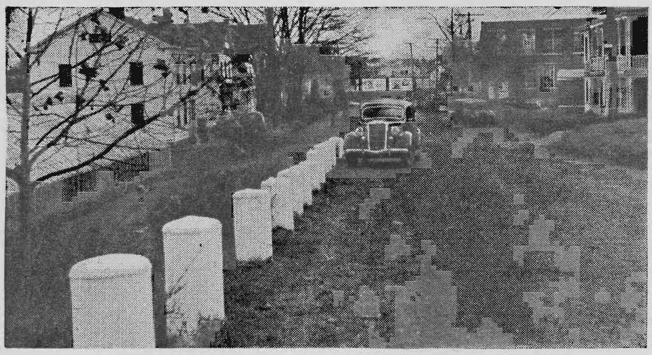
**4 EXPANDING A SPRING** may be done with a bumper jack and a piece of ¾" pipe flattened at one end. Rest the jack base and the pipe against the ends of the spring and work the jack until the shackle bolt can be inserted.—N. S. BEEBE.





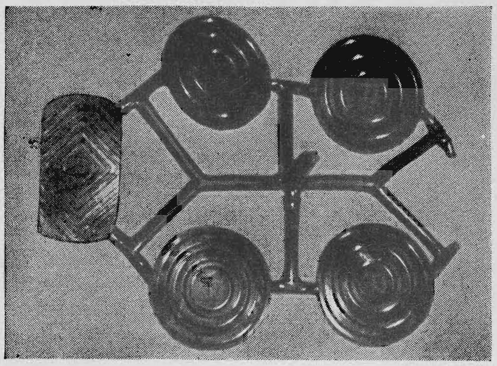


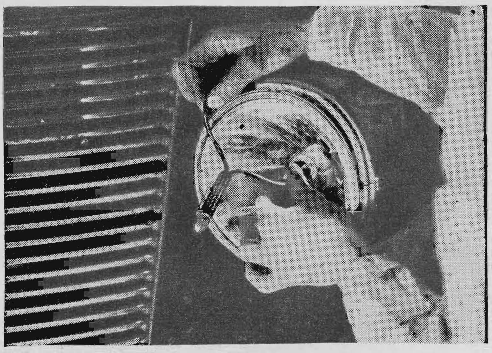
# AUTO IDEAS



**HOT-WATER TANKS** salvaged from a dump have proved a satisfactory substitute for costly cable fence at a danger point where a street skirts a steep hill in Bridgeport, Conn. The 6′ domestic-type tanks were buried for about half their length, filled with concrete, sealed, and painted white. Several cars have crashed into them, but all of the tanks still stand firm.—CHARLES BARR.

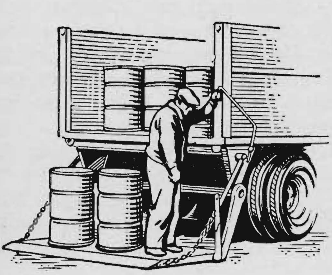
**PLASTIC PEDAL PADS** for automobiles are being produced at Bay City, Mich., by the Bay Manufacturing Division of the Electric Auto-Lite Company. Molded in various sizes from a rubberlike plastic, the new pads, shown in the photograph below, are designed to replace worn ones made of rubber. All are deeply ridged, providing a firm grip for the motorist's foot. They also are designed to fit securely over the bare steel of the pedal.

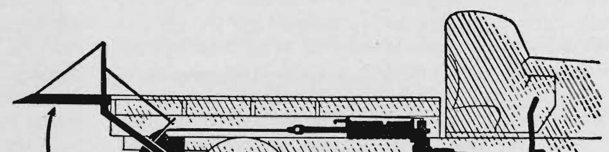




**CHECKING CIRCUITS** ranging from 5 to 50 volts is simplified by the above tester, manufactured by the Ideal Commutator Dresser Company, of Sycamore, Ill. It not only detects open circuits and burned-out fuses, but can be used to indicate relative line voltages. Small enough to carry in a pocket, the tester is intended for automobile and aircraft mechanics, telephone repair men, and electricians. A transparent plastic housing protects the lamp.

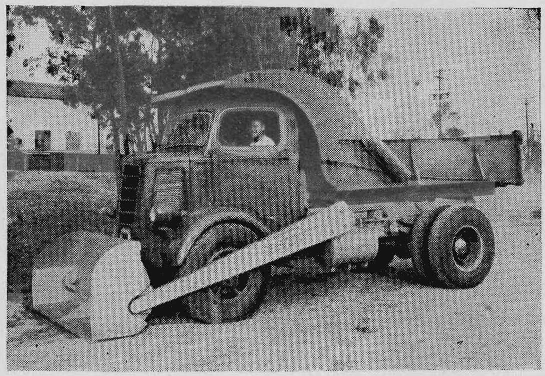
**LOADING AND UNLOADING** of trucks is achieved with greater ease and speed by means of an elevating endgate now available from the Fruehauf Trailer Company, of Detroit, Mich., for installation in place of an ordinary tail gate. Hydraulically driven by the truck engine, the steel gate serves as an elevator to raise or lower materials weighing as much as one ton. By its use, one man can handle objects normally requiring several persons. Operating levers are located at the rear of the vehicle.



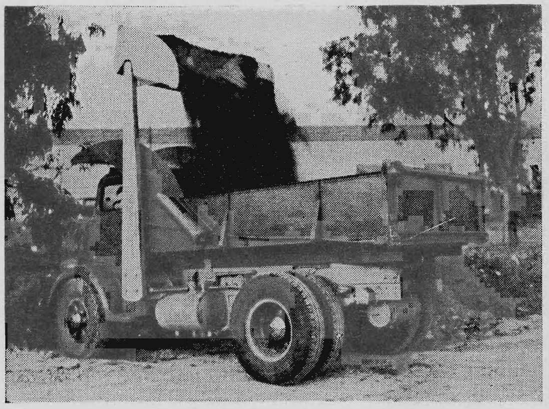


## AUTO IDEAS

**LOADING A TRUCK** equipped with the automatic hydraulic unit below requires only a few minutes, and the driver can accomplish the job alone without leaving his seat. The shovel, which has a one-yard capacity, will handle earth, gravel, sand, fertilizer, snow, and other loose material. Locked in position in front of the truck, the shovel also can be used as a modified bulldozer. The unit is manufactured by the Western Industrial Engineering Co., of Los Angeles.



With shovel lowered, the truck above moves forward to scoop up a load of earth. Then, swinging the load up and back, the driver dumps it, below, into the truck.



**WHEN TO SHIFT GEARS** for efficient engine operation is shown at a glance by a combination speedometer and tachometer produced by the White Motor Company. Curved white lines on the dial are provided for each transmission ratio. To read engine speed, the driver notes where a scale marked on the pointer intersects the curve of the transmission speed in use. A white area in the middle of the pointer indicates the ideal operating range—from 1,700 to 2,400 r.p.m. At either end is a red area indicating that the engine is outside that range.

**TEST TIRES** like the one above have been installed on a number of Shell Oil Company cars and trucks. The purpose is to determine the wearing qualities of Dutrex, a petroleum product developed by Shell for use as a plasticizer and extender for synthetic GR-S rubber in place of the more expensive Buna-S. With the co-operation of the General Tire and Rubber Company, 212 test tires were produced, half of each tire being made of ordinary synthetic rubber and half of synthetic rubber with Dutrex added. Weekly records of tread wear on each half are being kept. Tests already have shown that the new plasticizer speeds up the production of tires manufactured from synthetic rubber.